* NOTICES *



## DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application]This invention relates to a viscous fluid enclosure damper, especially a suitable damper to decrease the roll oscillation of the power unit of vehicles.
[0002]
[Description of the Prior Art]According to JP,H2-85019,A, the power-unit damper effective in roll oscillation control of vehicles is indicated. As shown in drawing 3, this damper between the center member 11 as a car body side member, and the power unit (engine + trans axle) 12, As it is attached to the position which became independent in the power-unit mount 13 and is shown in drawing 4, The rotating disk 16 fixed to the power unit 12 via the bolt 14 and the power-unit side bracket 15, It accommodated in the receiving space 18 of the casing 17 with the margin, and while carrying out seal restoration of the viscous fluid 19, between the casing 17 and the center members 11 is connected with the crevice between this rotating disk 16 and casing 17 by the link mechanism 20 of a both-ends swivel joint.
[0003]In such composition, central point $P_1$ of the power-unit damper 10, By rationalizing the physical relationship of two swivel-joint central point $P_2$ of the link mechanism 20, $P_3$, and roll central point $P_R$ (refer to drawing 3) of the power unit 12 (for example, physical relationship of drawing 3), This is changed into relative rotating displacement with the rotating disk 16 and the casing 17 to a roll oscillation, While attenuation control can be effectively carried out using the viscous shear resistance by the viscous fluid 19, to the oscillating input of those other than roll directions, this is smoothly absorbable by free rotation of a swivel joint.
[0004]According to the gazette, the art which enlarges viscous shear resistance and can decrease a roll oscillation more effectively is indicated. As this art is shown in drawing 5, while forming the heights 20b of concentric circle shape in the wall of the receiving space 20a of the casing 20, The same heights 21a also as the rotating disk 21 can be formed, these heights 20b and 21a can be combined by turns, a touch area with viscous fluid can be increased, resistance area can be expanded, and viscous shear resistance can be enlarged.
[0005]Drawing 6 is a front view of the rotating disk 21, and the heights 21a of the plural lines (a figure five rows) arranged by concentric circle shape are accepted. The notching 21b is formed in that part at all the heights 21a, and viscous fluid flows through this notching 21b.
[0006]
[Problem(s) to be Solved by the Invention]However, if it is in this Prior art, Although the notching 21b was formed in some heights and the flow way of viscous fluid was secured, since the arrangement direction of the notching 21b was a thing on a par with the radial direction of the rotating disk 21 in a straight line, it is difficult to spread viscous fluid over the whole, There was a

problem that the roll damping effect as expected might be unable to be demonstrated.
(1) Namely, conventionally, first, after restoration of the viscous fluid by composition is preceded and filled up with a notching sequence (refer to the white arrow in drawing 6), it is filled up with the crevice (crevice) between the heights 21a (refer to the dashed line arrow in drawing 6), but. Under the present circumstances, since the same crevice is filled up also from an adjoining notching sequence, the loophole of the air in a crevice will be closed and the filling shortage of viscous fluid will produce only the part of remains air.
(2) Since the crevice section had horseshoe-shaped [ keen ], it was easy to produce remains air in a corner of the crevice.
(3) Although restoration to the rotating-disk back side was performed exceeding the outermost periphery of a rotating disk, generally flow resistance was further apt for the course of such a detour to produce the filling shortage to large **, therefore the rotating-disk back side.
[0007]This invention was made in view of such a problem (1), (2), and (3), and there is a place made into the purpose in raising the charging efficiency of viscous fluid.
[0008]
[Means for Solving the Problem]A casing by which an invention of Claim 1 was combined with one side by the side of a power unit or the body, A rotating disk combined with another side by the side of a power unit or the body while being accommodated in ** inside this casing with a margin, In a viscous fluid enclosure damper containing viscous fluid with which the aforementioned room was filled up, and many uneven parts of concentric circle shape formed in the surface and a rear face of said rotating disk, two or more open holes which open the surface and a rear face of said rotating disk for free passage were formed in said rotating disk.
[0009]An invention of Claim 2 made concave cross-section shape of an uneven part of concentric circle shape of an invention of said Claim 1 the shape of a U character. An invention of Claim 3 cut and lacked a crevice of an uneven part of concentric circle shape of an invention of Claim 1 or Claim 2 at two or more places, and it has arranged this notching position so that a rotating disk may meet radially and it may become discontinuous.
[0010]
[Function]In the invention of Claim 1, viscous fluid flows via the open hole which opens the rear surface of a rotating disk for free passage, and the charging efficiency to the rear face of a rotating disk is raised. In the invention of Claim 2, viscous fluid flows the inside of the U character-like section of a crevice without a crevice, the remains air of a crevice corner is extruded, and a charging efficiency is raised.
[0011]In the invention of Claim 3, the channel which passes along a notch section and a crevice one by one is formed, the loophole of the remains air in a crevice is secured, and a charging efficiency is raised.
[0012]
[Example]Hereafter, working example of this invention is described based on Drawings. Drawing 1 and drawing 2 are the figures showing one working example of the viscous fluid enclosure damper concerning this invention. In drawing 1, 30 is a rotating disk and this rotating disk 30 is combined with one side by the side of a power unit or the body (refer to numerals 12 of drawing 4) (refer to numerals 11 of drawing 3). The rotating disk 30 is accommodated in the interior of a room of the casing (refer to numerals 20 of drawing 5) which is not illustrated with the margin, and the casing is combined with another side by the side of a power unit or the body.
[0013]Two or more heights 30a are radially formed in the rotating disk 30 by regular intervals, and these heights 30a are combined with it [ the same heights (refer to numerals 20of drawing 5 b) and by turns ] which were formed in the interior wall of a casing. Here, the crevice 30b is formed between the adjoining heights 30a, and the section of this crevice 30b is formed in the shape of an abbreviated U character (the 1st point). Two or more open holes 30c have opened in the crevice

30b (the 2nd point), and the rear surface of the rotating disk 30 is open for free passage by this open hole 30c.

[0014]Drawing 2 is a top view of the rotating disk 30. the four heights 30a -- similarly the four crevices 30b and the 12 open holes 30c are accepted. Some notching [ 30 d of ] is formed in the heights 30a, and the position which is 30d of this notching is considered as not following the radial direction of the rotating disk 30 (the 3rd point). In the above composition, restoration of viscous fluid is performed in accordance with the course a which passes through 30d of notching, and the crevice 30b by turns. This is [ not making 30 d of notching continue radially, and ] (the 3rd point). Therefore, the charging efficiency of viscous fluid can be raised, without producing remains air, since the loophole of the air in the crevice 30b is not closed.

[0015]Since sectional shape of the crevice 30b was made into the shape of a U character (the 1st point), viscous fluid can flow in to all the corners of the crevice 30b, the extrusion effect of remains air can be heightened, and much more charging efficiency can be acquired. Since the open hole 30c was formed in the bottom of the crevice 30b (the 2nd point), viscous fluid can be slushed into the rear face of the rotating disk 30 through this open hole 30c, and the charging efficiency to the rear face of the rotating disk 30 can be raised.

[0016]As mentioned above, in this example, the charging efficiency of viscous fluid can be raised without the exception of a rear surface by the 1st - the 3rd point, without producing remains air. Therefore, a roll oscillation damping effect as expected can be demonstrated. In working example, although the 1st - all the 3rd point are adopted, it may not restrict to this and one or two may be adopted.

[0017]

[Effect of the Invention]In this invention, two or more open holes which open the surface and the rear face of a rotating disk for free passage were formed in said rotating disk.

Therefore, since concave cross-section shape was made into the shape of a U character, Or since the crevice was cut and lacked at two or more places, and this notching position has been arranged so that a rotating disk may meet radially and it may become discontinuous, Without producing remains air, there is no exception of the rear surface of a rotating disk, the charging efficiency of viscous fluid can be raised, and a roll oscillation damping effect as expected can be demonstrated.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]
[Drawing 1]It is an important section sectional view of the rotating disk of one working example.
[Drawing 2]It is a front view of the rotating disk of one working example.
[Drawing 3]It is a damper installed position figure of a conventional example.
[Drawing 4]It is a damper installed position figure of a conventional example.
[Drawing 5]It is a lineblock diagram of a conventional example.
[Drawing 6]It is an important section sectional view of the conventional example which heightened the roll damping effect.
[Description of Notations]
20: Casing
20a: Receiving space (room)
30: Rotating disk
30a: Heights (uneven part)
30b: Crevice (uneven part)
30c: Open hole
30d: Notching

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[Translation done.]